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ABSTRACT

Emerging research on instructional leadership is examined in this paper, with a focus on the new perspective on strategic thinking. The main theme is that research must address the reasoning that underlies the exercise of leadership rather than describe discrete behaviors of effective leaders. A computer simulation designed to facilitate the transfer from research to leadership practice is described. The simulation model asks aspiring principals to choose a combination of improvement strategies using research-based cost and benefit information. Outcomes of the simulation are discussed and suggestions are made for the design and delivery of administrative training and development. Appendices contain a description of the problem scenario, a list of school improvement strategies, a synopsis of research on a strategy, and an example of a cost-benefit strategy description. (Contains 44 references.) (LMI)

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The National Center for Educational Leadership

Developing the Strategic Thinking of Instructional Leaders

by

Philip Hallinger
Vanderbilt University

and

C.E. McCary
Durham, North Carolina County Schools

Occasional Paper No. 13

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NCEL OCCASIONAL PAPER AND CASE SERIES

OP#1 ***Re-Thinking School Leadership: An Agenda for Research and Reform*** **by Lee G. Bolman, Susan Moore Johnson, Jerome T. Murphy, and Carol H. Weiss; Harvard University (February 1990), 42 pages**

This paper presents a basic model of the relationship between leadership, situation, and outcomes. Personal characteristics of leaders and the situation in which leaders find themselves both influence what leaders do, which in turn influences the kinds of outcomes that they produce. Embedded in the model are three questions: "What is good school leadership?" "How does good school leadership come about?" and "What will good school leadership mean in the future?" Systematic ways of approaching these questions are also presented.

OP#2 ***Preparing School Administrators for the Twenty-First Century: The Reform Agenda*** **by Joseph Murphy; Vanderbilt University (May 1990), 47 pages**

In the second wave of school reform reports and studies of the 1980s, much attention has been directed to issues of school administration and leadership. Yet, to date, no comprehensive analysis of these calls for changes in school administration has been undertaken. The purpose of this paper is to provide such a review. The goals of the paper are threefold: (1) to explain the reasons for the calls for reform of school administration, (2) to review the major studies and reports on education reform from 1982 to 1988 and (3) to discuss educational administration reform issues that need further attention.

OP#3 ***What Makes a Difference? School Context, Principal Leadership, and Student Achievement*** **by Philip Hallinger, Leonard Bickman, and Ken Davis; Vanderbilt University (June 1990), 35 pages**

This paper addresses the general question, what makes a difference in school learning? We report the results of a secondary analysis of data collected as part of the Tennessee School Improvement Incentives Project. We utilized the instructional leadership model developed by researchers at the Far West Laboratory for Educational Research and Development to guide our analyses. This conceptual model makes provision for analysis of principal leadership in relation to features of the school environment, school-level organization, and student outcomes. The paper focuses on the following research questions: (1) What antecedents appear to influence principal leadership behavior? (2) What impact does principal leadership have on the organization and its outcomes? (3) To what extent is the Far West Lab's instructional leadership framework supported empirically by the data collected in this study?

OP#4 ***School Restructuring: A Case Study In Teacher Empowerment*** **by Katherine C. Boles; Harvard University (September 1990), 58 pages**

School districts around the country are in the process of initiating projects to restructure their schools. A small but growing number of these restructuring projects have been initiated by teachers, but as yet little has been written documenting the experience of classroom practitioners involved in such efforts. The purpose of this study is to add teachers' voices to the literature on restructuring. This project restructured a portion of a school and altered the work of a group of third and fourth grade teachers.

OP#5 ***Educational Reform in the 1980s: Explaining Some Surprising Success*** **by Joseph Murphy; Vanderbilt University (September 1990), 28 pages**

In this paper issues of success and failure of reform initiatives are discussed from both sides of the aisle. The paper begins with a review of the financial, political, and organizational factors which normally support the position that reform measures are likely to result in few substantive improvements. Next, the argument is made that educational reform recommendations have been surprisingly successful, and some speculations as to the reasons for this unexpected outcome are presented.

OP#6 ***New Settings and Changing Norms for Principal Development*** **by Philip Hallinger; Vanderbilt University and Robert Wimpelberg; University of New Orleans (January 1991), 32 pages**

Recently analysts have identified a variety of features that distinguish emerging administrative training programs from traditional ones. The rapid, but non-systematic growth in organizations providing administrative development services during the 1980's led to considerable natural variation in programmatic content as well as in organizational processes. In particular, significant variations emerged in the operation of state-sponsored leadership academies and local principals' centers. The purpose of this paper is to analyze variations in current approaches to educational leadership development. The paper addresses three questions: (1) What is the range of variation among emerging staff development programs for school leaders on dimensions of program content and organizational process? (2) What can we learn from the naturally occurring variations in administrative development? (3) What are the most likely and promising directions for administrative development programs in the next decade?

OP#7 ***Images of Leadership*** **by Lee G. Bolman; Harvard University and Terrence E. Deal; Vanderbilt University (January 1991), 21 pages**

This project has undertaken a major study of the "frames," or orientations, that leaders use to guide their understanding of their work. The investigators have developed a set of survey instruments to measure four leadership orientations (structural, human resource, political, and symbolic), and collected data from leaders and their constituents in both education and the private sector. Their research results show that the four leadership orientations do capture significant elements of how leaders approach their task, and that those leadership variables are significantly associated with effectiveness. The results further show that the variables which predict effectiveness as a *manager* are different from those that predict effectiveness as a *leader*. In particular, structural and rational orientations are primarily predictive of manager effectiveness. This research was reported at the AERA meeting in April, 1990.

OP#8 ***Trouble in Paradise: Teacher Conflicts in Shared Decision Making*** **by Carol H. Weiss, Joseph Cambone, and Alexander Wyeth; Harvard University (April 1991), 26 pages**

Many educators advocate teacher participation in school decision-making as one strategy for improving schools. Through interviews with teachers and administrators in high schools that have adopted some version of shared decision making, the authors locate both advantages and disadvantages. Advantages center on great commitment and "ownership" of decisions. Disadvantages include, besides heavy time demands, the necessity for teachers to confront and negotiate with each other, a process that requires skills many teachers lack. There may also be conflicts with administrators, often because of unclear definitions of authority and responsibility. Suggestions are made for overcoming such problems.

OP#9 ***Restructuring Schools: Fourteen Elementary and Secondary Teachers' Perspectives on Reform*** **by Joseph Murphy, Carolyn M. Evertson, and Mary L. Radnofsky; Vanderbilt University (May 1991), 34 pages**

Few efforts have been made to inject classroom teachers' voices into discussions on restructuring. In this article, we report on one exploratory study that begins to address this oversight. We interviewed 14 teachers from diverse backgrounds about their views on the restructuring movement in general. We wanted to hear what they thought of the concept and to determine what effects they anticipated in restructuring schools. We also elicited their perceptions about what changes they would make in both the schools and classrooms if they were thrust into a school undergoing restructuring. We found that, while in some ways the views of these teachers were consistent with prevailing perspectives in the restructuring movement, in other cases, their preferences were at odds with the general body of literature on restructuring. We concluded that, while these teachers are optimistic about the possibilities of fundamental school reform, they remain skeptical about their ability to change the current educational system.

OP#10 ***The Effects of the Educational Reform Movement on Departments of Educational Leadership*** **by Joseph Murphy; Vanderbilt University (May 1991), 34 pages**

This paper reviews the types of revisions that preparation programs in educational leadership have begun to make in response to three related sets of pressures brought on by the reform movement of the 1980s: pressures bearing on school administrators from the larger reform agenda, i.e., improving education across the board; general critiques of and calls for improvement in educational leadership; and specific analyses and demands for change in administrator preparation programs. The results are based on questionnaires completed by 74 chairpersons in departments of educational leadership. The emerging picture is mixed. On the one hand, departments of educational administration have begun to respond to the pressures for change. In addition, for better or worse, discernable patterns in these revisions are generally consistent with the implicit demands for improvement that lace the critical reviews of the field and with the more explicit recommendations contained in the NPBEA and NCEEA reform reports. On the other hand, the response has been moderate (at best) in intensity and mixed in focus.

OP#11 ***A Typology of the Assistant Principal: A Model of Orientation to the Administrative Career*** **by Catherine Marshall; Vanderbilt University, Barbara Mitchell; School District of Philadelphia, and Richard Gross; Boyertown Senior High School, Pennsylvania (June 1991), 30 pages**

This paper describes the working lives of twenty assistant principals, exploring the interactions between personal values and organizational contexts. School districts' individual norms and traditions present unique conditions, restraints, and possibilities for these new administrators, who respond in a variety of ways. The study identifies five distinct career orientations, linking the administrators' early socialization experiences and their eventual mobility. This typology, derived from a variety of case studies, provides a basis for structuring recruitment, training, support, and selection practices for aspirants to administrative careers. This approach can inform school districts' approaches to staff development as well as individuals' career choices.

OP#12 ***The Cultural Chasm Between Administrator and Teacher Cultures: A Micropolitical Puzzle by Catherine Marshall; University of North Carolina at Chapel Hill (in press), 26 pages***

This paper examines the complex relationships between teachers and school administrators from a micropolitical perspective. Public schools have long enforced a bureaucratic separation of roles, professional status, socialization, and training, leading to value conflicts and factionalism. The move from teaching to administration can be especially traumatic, involving alienation from one peer group and gradual acceptance into another. Through analysis of interviews with new administrators, the authors explore the underlying causes of these conflicts and shifts in perspective. To what extent do teachers and administrators differ in their understandings of school culture? How do new school leaders acquire the political skills and attitudes inherent to administration, and how do these attitudes affect interactions with teachers?

OP#13 ***Developing the Thinking Strategies of Instructional Leaders by Philip Hallinger; Vanderbilt University, C.E. McCary; Durham North Carolina Schools (in press), 23 pages***

In light of the critical role that principals play in school improvement, the inadequacy of current principal preparation presents a major problem for policy and practice. This article examines emerging research on instructional leadership and call for leadership training that emphasizes strategic thinking. The authors argue that research must address the reasoning that underlies the exercise of leadership, rather than describe discrete behaviors of effective leaders.

The article includes a description of a computer simulation designed to facilitate the transfer from research to the practice of leadership. The simulation model asks aspiring principals to choose a combination of improvement strategies using research-based cost and benefit information. The authors discuss their experiences with the simulation and offer suggestions for the design and delivery of administrative training and development.

CASE STUDIES

CS#1 ***The Prince and the Principal*** will serve as a powerful discussion piece for aspiring or practicing administrators, as well as for teachers interested in leadership. In it, a new principal begins her tenure at a troubled Chicago elementary school, met with resistance and animosity from a group of "old guard" teachers. Eager to correct what she sees as glaring problems, she feels herself blocked in all efforts to effect positive change, from minor improvements to more significant school restructuring. After a series of frustrations, she makes a decisive but risky change in perspective and strategy. The case focuses on the most difficult challenge faced by new leaders: to reconcile one's emerging skills and understanding to an idiosyncratic school culture. Topics for discussion include: the importance of gaining the support of teachers, parents, and other administrators; the value of setting clear goals for improvement; and the decision to persist despite the slow pace of change.

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Developing the Strategic Thinking Of Instructional Leaders

by

Philip Hallinger and C.E. McCary

Introduction

Research conducted over the past twenty years has concluded overwhelmingly that principal leadership is critical to school improvement (Berman & McLaughlin, 1977; Cuban, 1984; Wellisch, MacQueen, Carriere, & Duck, 1978). Policymakers have joined in this consensus, as demonstrated in the National Governor's Association report, Time for Results (1987), and reiterated at the 1989 presidential summit on education in Charlottesville, Virginia. As Washington Governor Booth Gardener observed, governors and administration officials alike agree that principals will play the key role in developing the skills of teachers entering the workforce. Unfortunately, there is reason to question whether current principal training programs are equipped to meet this challenge.

Analyses of principal preparation programs have identified serious deficiencies (Bridges, 1977; Cooper & Boyd, 1987; Crowson & McPherson, 1987; Griffiths, Stout, & Forsyth, 1987; National Policy Board for Educational Administration, 1989), including: inadequate skill development, poorly designed opportunities to practice leadership tasks, limited coursework on teaching and learning, and little effort to socialize aspirants to the real world of school administration. School leadership training has lagged behind other fields in incorporating research on adult learning, organizational change, cognitive psychology, effective teaching, and staff development. These shortcomings in preparation are clearly major factors in the poor leadership often observed in schools.

In this article, we discuss the emerging research on instructional leadership, focusing especially on new perspectives on strategic thinking, and we discuss implications for preparation programs. Next, we describe a computer simulation that helps aspiring principals to bridge the gap between the abstract knowledge base and the real challenges of leadership. We close by suggesting future possibilities for research and training in school leadership.

Instructional Leadership: An Emerging Role

Over the past fifteen years, research has made great progress in identifying functions and tasks that comprise instructional leadership (Andrews, Soder, & Jacoby, 1986; Hallinger & Murphy, 1985; Leithwood & Montgomery, 1984; Russell, Mazzarella, White, & Maurer, 1985; Shoemaker & Fraser, 1981). Consequently, behavioral descriptions of "effective principals" have become commonplace in professional journals and in leadership development programs offered to practicing administrators. Although preservice preparation programs have been slower to incorporate this content, there is increasing pressure to make instructional leadership a more substantial component of the preservice curriculum (National Governors' Association, 1987; National Policy Board for Educational Administration, 1989).

We assume that efforts to train principals for instructional leadership will continue to gain momentum, but we doubt that current approaches will result in better leadership. Generic descriptions of effective principal behaviors should not serve as the basis for training and development. Although some general leadership functions may be important in all schools, the manner in which these functions are implemented must be adapted to meet the needs of particular students, communities, and schools. Effective leadership of a large urban high school may look very different from effective leadership at a small rural elementary school or a suburban middle school. For example, Firestone and Herriott (1982) found that, in comparison with elementary teachers, high school teachers exhibit less goal consensus, less investment in basic skill achievement, and less responsiveness to managerial influence on teaching.

Instructional leadership is, then, more than the exercise of discrete functions such as "setting goals" or "monitoring student progress." Recent studies support a conception of instructional leadership as a context-bound role, dependent on all kinds of personal, organizational, and cultural factors. This emerging view of leadership places emphasis on the thought processes that underlie principals' behavior, rather than on behaviors themselves.

Principals who have the most positive influence on student learning tend to be

those who take a strategic approach to instructional leadership. This involves skillful planning, forethought, an understanding of the interdependence of actions within a social system, and a purposeful coordination of resources. Strategic thinkers consider the interplay between actions and responses as they relate to goals, goals that may be stated explicitly or implied in the principal's understanding of the school and its needs. It is not enough for principals to have a repertoire of behaviors; they must know how and when to use them, and they must be careful to monitor their effects on student learning.

Strategic Thinking and Lessons from the 1980s

The conception of instructional leadership as an aggregate of discrete behaviors, though deficient in and of itself, can serve as the foundation for a new approach. Several studies from the 1980's suggest expanding the prevailing model of leadership to include principals' strategic thinking (Dwyer, 1986;; Dwyer et al, 1983a, 1983b; Firestone & Wilson, 1985; Leithwood & Montgomery, 1984; Leithwood & Stager, 1986, 1989; Leithwood & Steinbach, 1989; Taylor, 1986a, 1986b). We briefly examine these studies.

Dwyer and his colleagues (1983a, 1983b, 1986) at the Far West Laboratory for Educational Research and Development conducted ethnographic case studies of successful and typical principals, and concluded that different school contexts call for different types of instructional leadership. They placed special emphasis upon principals' routine behaviors (1983a, pp.11--12):

> Instead of leaders of large-scale or dramatic innovation, we found men and women who shared a meticulous attention to detail.... These are the routine and practical acts through which principals can assess the working status of their organizations and the progress of their schools relative to long-term goals. They are the acts that allow a principal to alter the course of events mid-stream; to return aberrant student behavior to acceptable norms; to suggest changes in teaching style; to develop student, teacher, or community support for programs already underway; and to develop awareness of changes in the organization that must be made in the future. We speculate that the effects of these routine acts on the quality of instruction and student experience in the school can be substantial.... The success of principals as instructional managers hinges....on their capacity to connect their routine activities to their

instructional systems.

Dwyer et al concluded that successful principals displayed more higher order thinking than their counterparts. In their actions, and in reflection on their actions, these principals demonstrated a clear conception of the relation between important features of the school organization and their own role in moving the school forward. They adapted their behavior to meet the needs of their communities and they attempted to shape instructional systems to improve student achievement. This was true regardless of whether the principals' goals were formulated as part of school improvement plans.

The research conducted at the Far West Laboratory emphasizes the routine actions that comprise the workday of the school principal. For example, a principal committed to faculty improvement might use faculty meetings as a forum for staff development. A principal who is unclear about key values and goals would spend the same time in a less purposeful manner, perhaps addressing administrative details. Higher order thinking, as described by Dwyer, is consistent with our own emphasis on strategic thinking. The principal must develop an awareness of the relation between the needs of the school and his/her actions as an instructional leader.

Leithwood and colleagues at the Ontario Institute for Studies of Education (OISE) also conducted research that focuses on the strategic dimension of principal leadership (Leithwood, 1987; Leithwood & Montgomery, 1984; Leithwood & Stager, 1986, 1989; Leithwood & Steinbach, 1989). Reflecting on earlier research, Leithwood (1987, p.64) cautioned that, "descriptions of effective overt action, without an analysis of the thinking behind the actions might lead to an inflexible recipe for school leadership that severely constrains the contextually sensitive judgements of many principals." Consequently, the OISE undertook a series of empirical investigations of principal effectiveness with special attention to problem-solving expertise. Using a variety of research methods and designs, they provide a useful elaboration of earlier work that examined leadership behaviors. Giving independent support to Dwyer's research,

Leithwood (1987, p.65) found that:

> Principals primarily engage in solving problems which, considered individually, seem trivial. Since this description applies to all those in the role, what distinguishes the work of highly effective principals? A crucial part of the answer is consistency, or ability to accumulate the effects of many seemingly trivial decisions in moving the school in the directions valued by the community, the staff, and themselves. Principals are effective in improving there schools to the extent that they have a well-defined set of legitimate purposes and the skill and knowledge to use even apparently unrelated opportunities to direct the school toward achieving them.

Thus, Leithwood suggests that the principal's ability to exercise effective leadership is related to the purposeful quality of thought that guides administrative action. A similar notion is reinforced by Peterson's (1986) research on problem-finding in principal leadership. Problem-finding, which is at least as vital as problem-solving, determines the ends toward which the principal organizes routine activities during the frenetic and fragmented activity of the workday. Problem-finding, says Peterson, is related to the principal's vision (i.e., values, goals, and purposes) of school improvement:

> Problem-finding will be influenced by the degree to which the manager has a clear and strongly-held idea of where the organization ought to go and what strategic factors are moving the organization forward. In contrast, principals whose vision is not clear and crystallized are more likely to engage in problemistic search, firefighting rather than problem-finding and problem-solving.

Principals with vision engage in focused problem-finding, which helps shape organizational activities, teacher actions, and student learning. This focus channels the actions of subordinates in a coordinative fashion and builds commitment by increasing the formal communication linkages and by signaling to subordinates that which is organizationally important.

Taylor, in her study of successful elementary school principals, explores a deeper

level of problem-finding, focusing on the ways in which principals make sense of their schools (1986b). She refers to the strategic thinking and subsequent actions of principals as "metasensemaking."

"Metasensemaking is a form of organizational enactment used to further the potential for organizational momentum and individual motivation during programs of school improvement" (Taylor, 1986b, p.15). A key facet of metasensemaking is "strategic dialogue," in which the principal, the staff, and other constituencies engage in consideration of the school's cultural noms and values. This process call attention to the principal's role in organizational design. Taylor (1986b, pp.15-16) notes that:

> The effective principal attends to certain factors, emphasizing different elements in these factors, during the successive stages or phases of school change: Principals emphasize cultural and climate elements of the school during the first change phase; elements which promote consistency across school procedures during the second phase; and in the third phase of school improvement, effective principals promote cohesion as they institutionalize the changes that work for the school.

We interpret this emerging literature to characterize strategic leadership by clear vision and coordinated, consistent, purposeful action. The actions of successful principals are crafted according to their schools' current needs and stages of development. This does not imply strict adherence to a rigid planning process. Although strategic behavior is purposeful, it must take into account the fluid and changing nature of events. Strategic leaders anticipate the probabilities of cause-effect relationships but remain open to new information and adaptation. As Taylor writes (1986a, p.15),

> Effective change principals see change in terms of all three levels of the organization: idiographic or individual, formal or structural, and external or environmental. They are proactive in their management posture; that is, effective change principals see and plan ahead and set objectives, all the while predicting contingencies with regard to organizational actions and subsequent responses which will be made by the school's constituencies.

In other words, leaders may not always appear consistent in their actions. A principal might, for example, behave in ways that seem inconsistent but that encourage action on the part of the faculty. Viewed in the context of larger purposes, such behavior can be considered strategic.

Problem-Based Learning and Leadership Development

As we have noted, most pre-service administrative training in education fails to result in effective instructional leadership. Principals report that their academic coursework seldom prepares them for the problems and dilemmas they face in their work. They perceive on-the-job experience as a far more influential source of learning (Murphy et al.,1987; Notar, 1988-89).

There is, however, no reason to assume that experience alone makes for effective leadership. March (1978) has pointed out that in many cases experience can be a misleading teacher, and others have shown that principals' work environment can impede their ability to learn from experience (Murphy et al., 1987; Peterson, 1986). The problems principals encounter are often ambiguous, involving uncertainty, shifting goals, and conflicting values. These features of managerial work require that principals become capable problem-finders and strategic thinkers, but few preparation programs address these skills. Most principals, then, come to the job with limited knowledge of curriculum and instruction, a limited repertoire of problem-solving skills, and little opportunity to develop these skills on the job.

Institutions charged with principals' training must find ways to make the connections among research, theory, and practice more evident and applicable to practice. This is hardly a recent challenge. Whitehead (1929) argued over sixty years ago that traditional education is adept at producing "inert ideas," or "knowledge that can usually be recalled when people are explicitly asked to do so but that is not used spontaneously in problem-solving contexts even though it is relevant" (Cited in Bransford,

Franks, Vye, & Sherwood. 1989, p. 470). The traditional lecture mode of instruction, prevalent in current programs, seems relatively ineffective at imparting knowledge across contexts. Bransford et al. (1989, p.470) stress that:

> The argument is not that people are unable to learn from being shown or told. Clearly, we can remind people of important sets of information and they can often tell it back to us. However, this provides no guarantee that people will develop the kinds of sensitivities necessary to use relevant information in new situations.

Brown, et al (1983) identified this as the "interdependence of learning and transfer. "Students, they argue, have not really learned something if they cannot apply it to related problems. Adult learners, in particular, bring to the classroom prior knowledge and habits that may impede new learning. Before adult learners will accept new information or adopt a new orientation, they must have the opportunity to compare and test the idea against current beliefs. If they are to apply the knowledge base, they must not be led to expect real-life problems to have well-defined causes and clear solutions.

Many researchers advocate problem-based approaches to administrator training. Rather than studying theories in the abstract, subject matter can be addressed in the context of an administrative problem. For example, students would learn information on teacher evaluation -- legal and ethical issues, instructional and supervisory approaches, and organizational and environmental considerations -- as they attempt to solve a realistic teacher-evaluation problem.[1]

Initial studies suggest promising results for problem-based training. Bransford et al (1986, 1989) report considerable success in simulating the kinds of dilemmas principals typically face on the job. In a series of studies, they found that students were more likely to apply their learning to relevant problems when they had learned new information in related problem-solving contexts (Adams et al., 1986; Sherwood, Kinzer, Bransford, & Franks, 1986). Knowledge that might otherwise have remained "inert" was spontaneously accessed and used as a tool in solving similar problems.

Evidence from medical education abroad also suggests that students who are taught using problem-based instruction outperform those trained under conventional

methods (Snow, 1984). Bridges (1989, p.7) notes:

> On tests of medical knowledge in the field of anatomy Maastricht students [taught with a problem-based approach] scored higher on average than resident physicians trained in other medical schools even though the Maastricht students take no formal courses in this field. Even more impressive are the data on time to complete the degree and the data on attrition. By way of illustration, 88 percent of the class of 1974 at Maastricht had received diplomas seven years later compared with only 21 percent of the students at the more traditional medical schools. The differences in drop-out rates were equally dramatic -- two percent at Maastricht and 18 percent at the other medical schools.

These results, though preliminary, provide encouragement for exploring the application of problem-based learning to the training of school leaders. In the following section we discuss the development and use of a problem-based computer simulation designed to teach aspiring principals to think strategically about instructional leadership and school improvement.

ITCOT: The Problem Scenario

The dean and selected faculty of Peabody College of Education at Vanderbilt University conceived of an interactive computer simulation in which aspiring principals would apply research findings to a school improvement project. The simulation, "In the Center of Things" $(ITCOT)^2$, gives participants the role of a newly-appointed principal at an elementary school that has registered low fourth-grade test scores (see Appendix A). The simulation provides extensive information about the school, staff, students, community, and school district. Problems are similar to ones that a principal might face in the field.

The simulation is based on an economic model of decision making, in which the learner (the principal) must make cost-effective use of scarce resources. The principal begins with $30,000 and 2,000 hours of staff time to devote to the problems causing low test scores. The money, a special allocation from the school board, can be used to

purchase additional staff time as the principal desires. The principal's goal is to maximize student achievement through expenditure of available resources on any of a variety of educational improvement plans.

The principal is supplied also with a "knowledge base" for action, consisting of 33 programmatic approaches to improving student achievement drawn from a research synthesis conducted by Peabody College faculty (Hawley & Rosenholtz, 1984; see Appendix B). The simulation provides a synopsis of relevant research for each approach (see Appendix C) as well as a "cost/benefit" analysis (see Appendix D) predicting the cost (in money and energy) and anticipated effect on student achievement (in grade equivalents) of each strategy. These strategies and the relevant research are communicated in a series of computer screens that participants can access in any sequence (see Appendix C). The principal draws on available resources (time, energy, money, knowledge) to solve problems. Choices must be made among alternative actions, each of which has varying costs and benefits.

Engaging Learners in Strategic Thinking

Had the simulation ended at this level of analysis and application, ITCOT would reflect a relatively low level of thinking about principals' work. In Leithwood's (1987) terms, the actions expected of the participants would represent a "decision making" mode rather than a "strategic" mode of thinking. Players would only have to access the cost/benefit analysis for each strategy and select those with the maximum return for minimum cost. Such an approach would have presented the available school improvement strategies in terms of a well-structured problem -- how to raise test scores --with complete information about possible alternatives and outcomes. Although this approach might have helped participants to learn about the cost-effectiveness of various strategies, it would have fallen far short of challenging students with the uncertainties that principals face in real school improvement.

No simulation can fully model the complexity of the problems that principals typically face; however, ITCOT's extensive historical, statistical, and anecdotal

information creates a rich, specific context, sensitizing learners to the conditions under which various improvement strategies are likely to be effective. Furthermore, ITCOT models the interdependence between choices made by the principal and changes in the school. In the simulation, the costs and benefits of each strategy vary according to the sequence of implementation. The research synthesis that undergirds the simulation emphasizes the "importance of viewing schools as social systems.... Efforts to change a part of the system without changing those elements with which it interacts will not usually be effective" (Hawley & Rosenholtz, 1984, p.34). The simulation uses a contingency table to adjust the cost/benefits assigned to each strategy depending on which other strategies have already been implemented. This feature of the simulation most closely models the complexity and uncertainty of real school improvement efforts.

For example, attention to organizational goals relatively early in the simulation will produce a small positive effect on student achievement; implementation later in the simulation will produce a small negative effect. The change in benefits reflects the difference between setting school improvement goals with the staff prior to moving ahead versus selecting and implementing a program in the absence of staff support. Setting goals with the staff provides a common frame of reference, establishes priorities, and makes resource allocation more efficient. The existence of a common frame of reference among the staff makes it easier to identify and implement curricular, instructional, and staff development programs. Thus, these actions accrue larger benefits if goals have been set collaboratively prior to their implementation.

ITCOT's Instructional Component

As with any simulation, participants can sometimes stumble onto a successful formula without understanding why it works. For this reason, computer programs should complement rather than replace a teacher's instruction. Consequently, ITCOT's instructional design is essential.

ITCOT training is divided into two 1-hour sessions during which students use the computer simulation. The sessions are separated by a debriefing; the second 1-hour

session is followed by a concluding discussion led by the instructor. Since cooperative learning is central to the instructional design, two or three participants are assigned to each computer even if there are sufficient machines for everyone. During the first session, the teams are encouraged to investigate all possible approaches to school improvement. However, before they can implement any approach, they must first plan their strategies. In other words, each team must plan the general order in which it will proceed and must write a paragraph or two giving a rationale for the strategy.

This brief written explanation encourages participants to make their implicit theories of change explicit. It encourages articulation of the participant's thinking, reveals preconceptions and potential inconsistencies, and requires the use of prior knowledge. At the end of the first hour, these initial efforts are compared to the results obtained by other teams. The assumptions that guided each team's efforts are discussed and evaluated by the whole group in this debriefing session. This opportunity to exchange and critique strategies is critical to raising the learners' awareness of their assumptions and alternative courses of action.

The discussion is supplemented by a coaching session in which the instructor presents additional information about implementing school improvement. This has immediate practical application, since participants are preparing to achieve better results in a second session. Presentation and discussion after the second session focus on the implications and limitations of related research, reinforcing the notion that although research finding can be used to inform practice, they should not be used as rigid prescriptions.

Thus far, evidence of ITCOT's effectiveness as a training device is anecdotal. Participants consistently rate the sessions highly and report that the research has been presented in a way that can be applied to schools. Participants almost always increase their scores during the second session. Whether they can and do use these approaches in subsequent work is a topic for future investigation.

Conclusion

In this article we described an approach for leadership training that diverges in

both form and substance from predominant models. We have suggested that effective instructional leadership depends upon the ability to think strategically rather than to enact prescribed behaviors. It is interesting to note the similarity between this perspective and the trend in research and development in teacher education. During the 1970's and early 1980's, teacher education focused primarily on instructional behaviors associated with "effective teachers" (Rosenshine, 1983). More recently, the field has begun to reconceive of teaching as a decision making activity, resulting in a new focus on the thinking that underlies teachers' actions (Bransford et al., 1989; Costa, 1985; Joyce, 1985).

At the outset of this article we discussed the critical role envisioned for principals in the coming decade of school reform. The ability to skillfully implement changes originating outside as well as inside the school organization will be a key requirement for principals. We hope that future research on strategic thinking will provide further conceptual development of instructional leadership. Similarly, we see a need for research that explores the potential and limitations of problem-based learning. If the promise suggested by this approach is supported by empirical results, it may be possible to prepare principals who are better trained to meet the complex tasks of their work.

Appendix A

The Problem Scenario

You are succeeding Mr. Steve Meadowbrook who, after six years, has left to become executive vice-president of his father-in-law's lucrative real estate firm down-state. Meadowbrook leaves a good school to you, with perhaps one exception. As an alumnus of Center Elementary, the Superintendent shares the view that his dear old Center has a problem. He if confident you are the one to solve the problem this year.

You recall leaving the Superintendent's office on your first day of work two weeks ago (August 1st) with the news ringing in your ears that he had been able to get you a $30,000 appropriation for this year for the strict purpose of solving "the Center Elementary School situation. " In addition, he reminded you that there existed 2,000 hours of energy; "enthusiastic staff energy" he called it, ready and willing to participate in solving Center's problem.

The problem is Center Elementary School's fourth-grade achievement test results. The Center School District uses the nationally normed Continental Achievement and Review Test to assess student performance. The test is administered in the seventh month of each school year to all students. The results are reported as "Grade Equivalent" scores (G.E.). Nationally, the average-achieving youngster will, in one year of school, show a test growth of 1.0 G.E. However, the students in Center Elementary School score well above the national norms. Thus, the "norm" for Center Elementary School fourth grade should be above 5.0 and perhaps as high as 5.75. In fact, fourth grade results are only at 4.3 G.E. Your job is to maximize the fourth-grade achievement scores.

Appendix B

School Improvement Strategies

1.0 *Improving the curriculum*

- 1.1 The fit between curricula and tests
- 1.2 Coherence of the curriculum
- 1.3 Rigor of the curriculum
- 1.4 Avoiding constraints on learning opportunities

2.0 *Ensuring the competence of the teachers and staff*

- 2.1 Recruitment and selection of teachers
- 2.2 Monitoring and evaluation of teacher
- 2.3 Enhancing the competence of the teacher staff

3.0 *Creating conditions that facilitate effective teaching*

- 3.1 Maximize time available to teach
- 3.2 Maintaining student discipline
- 3.3 Facilitating teacher interaction
- 3.4 Formalization: defining roles and responsibilities

4.0 *Determining class size*

5.0 *Structuring the curriculum*

6.0 *Determining class structures and composition*

7.0 *Gaining the support of parents and other community resources*

8.0 *Motivating teacher performance*

- 8.1 Establishing and maintaining norms emphasizing achievement
- 8.2 Providing for participation in decision
- 8.3 Providing teachers feedback on their performance
- 8.4 Providing teachers opportunities for development

9.0 *Changing the schoolwide learning environment*

- 9.1 Academic press - schoolwide focus on achievement
- 9.2 The maintenance of order
- 9.3 School size

10.0 *Attending to the goals of the school or classrooms*

- 10.1 Articulating organizational goals
- 10.2 Encouraging the norm of collegiality
- 10.3 Facilitating teacher participation in decision making

11.0 *Regular monitoring of student achievement*

12.0 *Using electronic technology*

- 12.1 Computer based instruction (CBI)
- 12.2 Computer managed instruction (CMI)

13.0 *Seeking Parent Involvement and Assistance*

- 13.1 Involving parents in the education of their children
- 13.2 Homework
- 13.3 Monitoring and guiding student time watching television
- 13.4 Use of instructional television
- 13.5 Educational television at home

Appendix C

Synopsis of Research on a Strategy

Attending to the goals of the school or classrooms

Successful organizations have clear, measurable, and widely accepted goals. Agreement about goals and means to achieve them provide the organizational bases for directing, motivating, justifying, and evaluating behavior.

Goals in schools are multiple and diffuse; the power that principals have to insist on performance is limited, the ways to achieve students learning objectives are not fully known, and the quality of the product cannot be measured well by market response. Both (a) the extent to which goals are understood and shared, and (b) the content of the goals influence effectiveness and leadership functions.

Encouraging the norm of collegiality*

Educational researchers have identified two distinct normative climates:

A) excessive autonomy and professional isolation, and

B) collegiality (cooperation, sharing ideas, assisting colleagues).

These recurrent patterns of daily interaction and exchange affect teacher effectiveness: A) affects negatively, and B) affects positively.

In successful schools, collegiality results from direct intervention by the principal. Time is set aside for faculty and sub-groupings of faculty to meet for joint planning and problem-solving, for interaction in and during inservice programs, and for formal meetings of subgroups of faculty charged with particular technical responsibilities.

(See Appendix D for the Cost/Benefits of this strategy)

*(Note: this is actually a "sub-approach" of Attending to Goals of the School or Classrooms.)

Appendix D

Example of Cost/Benefit Description for a Strategy

Encouraging the Norm of Collegiality: Cost/Benefit

One hour per week per teacher subgroup is the minimum energy investment for this choice. The implementation of a grade subgroup for each grade and an interlocking series of curriculum content subgroups necessitate additional hours of decision making; this choice represents the use of an additional 735 hours of energy.

Dollars costs are negligible.

A CART score increase of 0.12 can be expected.

Note: Benefits for some choices depend on the sequence in which you select them, hence the benefit can vary at times. Such is the case with this choice.

Notes

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1. This illustration is based upon a case developed by Edwin Bridges at Stanford University.

2. ITCOT was developed by Vanderbilt University faculty including Linton Deck, Henry Goodstein, Ted Hasselbring, Willis Hawley, Jack Hunt, David Markham, and Susan Rosenholtz. The ITCOT software and training materials are available for use by others involved in the preparation and training materials are available for use by others involved in the preparation and training of school leaders. Additional information may be obtained by contacting the CASEL office at Box 503, Peabody College, Nashville, TN 37203.

References

Adams, L., Perfetto, G., Yearwood, A., Bransford, J., & Franks, J. (1986). Facilitating access. Unpublished manuscript, Vanderbilt University.

Andrews, R., Soder, R., Jacoby, D. (1986). Principal roles, other in-school variables, and academic achievement by ethnicity and SES. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Berman, P., & McLaughlin, M.W. (1977). Federal programs supporting educational change, Volume VII: Factors affecting implementation and continuation. Santa Monica, CA: Rand Corporation.

Bransford, J., Franks, J., Vye, N., & Sherwood, R. (1989). New approaches to instruction: Because wisdom can't be told. In S. Vosniadou & A. Ortony (Eds.), Similarities and analogical reasonings (pp. 470-497). New York, NY: Cambridge University Press.

Bransford, J. Sherwood, R., Vye N., & Rieser, J. (1986, October). Teaching thinking and problem-solving. American Psychologist, 41(10), 1078-1089.

Bridges, E. (1982). Research on the school administrator: The state of the art, 1967-1980. Education administration: The developing decades (pp. 202-230). Berkeley, CA: McCutchan.

Bridges, E. (1989), Combining theory, research, and practice: Problem-based learning. Paper presented at the annual meeting of the University Council for Educational Administration, Phoenix, AZ.

Brown, A., Bransford, J., Ferrara, R., & Campione, J. (1983). Learning, remembering and understanding. In J. Flavell & E. Markman (Eds.), Carmichael's manual of child psychology, Vol.I. (77-166). New York, NY: Wiley.

Cooper, B.S., & Boyd, W.L. (1987). The evolution of training for school administrators. In J. Murphy & P. Hallinger (Eds.), Approaches to administrative training in education (pp. 3-27). Albany, NY: State University of New York Press.

Costa, A. (1985) Mediating the metacognitive. Educational Leadership, 42(3), 57-62.

Crowson, R. & McPherson, R.B. (1987). The legacy of the theory movement: Learning

from the new tradition. In J. Murphy & P. Hallinger (Eds.), Approaches to administrative training in education (pp. 45-66). Albany, NY: State University of New York Press.

Cuban, L. (1984). Transforming the frog into a prince: Effective schools research, policy, and practice at the district level. Harvard Educational Review, 54(2), 129-151.

Dwyer, D. (1986). Understanding the principal's contribution to instruction. Peabody Journal of Education, 63(1), 3-18.

Dwyer, D., Lee, G., Rowan, B., & Bossert, S. (1983a). Five principals in action: Perspectives on instructional management. San Francisco, CA: Far West Laboratory for Educational Research and Development.

Dwyer D., Lee, G., Rowan, B., & Bossert, S. (1983b). The principal as instructional leader: No single vision, no simple formula. San Francisco, CA: Far West Laboratory for Educational Research and Development.

Firestone, W., & Herriott, R. (1982, December). Prescriptions for effective elementary schools don't fit secondary schools. Educational Leadership, 40(3), 51-53.

Firestone, W.A., & Wilson, B.L. (1985, Spring). Using bureaucratic and cultural linkages to improve instruction: The principal's contribution. Educational Administration Quarterly, 21(2), 7-30.

Griffiths, D., Stout, R., & Forsyth, P. (1987). Leaders for America's schools. Tempe, AZ: University Council for Educational Administration.

Hallinger, P., Bickman, L., & Davis, K. (1989, March). What makes a difference? School context, principal leadership, and student achievement. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. Elementary School Jounal, 86(2), 217-247.

Hawley, W., & Rosenholtz, S. (1984, Summer). Good schools: What research says about improving student achievement. Peabody Journal of Education, 61(4), 14-114.

Joyce, B. (1985, May). Models for teaching thinking. Educational Leadership, 42(8), 4-8.

Leithwood, K. (1987). Using the principal profile to assess performance, Educational Leadership, 45(1), 63-68.

Leithwood, K., & Montgomery, D. (1984, April). Patterns of growth in principal effectiveness. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Leithwood, K., & Stager, M. (1986). Differences in problem-solving processes used by moderately and highly effective principals. Paper presented at the annual meeting of the American Education Research Association, Chicago.

Leithwood, K., & Stager, M. (1989). Expertise in principals' problem-solving. Educational Administration Quarterly, 25(2), 126-151.

Leithwood, K., & Steinbach, R. (1989, June). A comparison of processes used by principals in solving problems individually and in groups. Paper presented at the annual meeting of the Canadian Association for the Study of Educational Administration.

March, J. (1978) American public school administrator. A short analysis, *School Review*, 86, 217-250.

Murphy, J., Hallinger, P., Miller, S., & Lotto, L. (1987, December). Barriers to implementing the instructional leadership role. The Canadian Administrator, 27(3), 1-12.

National Governors' Association. (1987). The Governors' 1991 report on education: Time for results, 1987. Washington, DC: National Governors' Association.

National Policy Board for Educational Administration. (1989, May). Improving the preparation of school administrators. Charlottesville, VA: University of Virginia.

Notar, E. (1988-89). What do principals say about their university training and its relationship to their jobs? National Forum of Applied Educational Research Journal, 1(2), 14-18.

Peterson, K. (1986). Vision and problem finding in principals' work: Values and cognition in administration. Peabody Journal of Education, 63(1), 88-106.

Rosenshine, B. (1983). Teaching functions in instructional programs. Elementary School Journal, 83(4), 335-351.

Russell, J., Mazzarella, J., White, T., & Maurer, S. (1985, June). Linking the behaviors and activities of secondary school principals to school effectiveness: A focus on

effective and ineffective behaviors. Eugene, OR: Center for Educational Policy and Management, University of Oregon.

Sarason, S. (1982). The culture of the school and the problem of change. Boston, MA: Allyn & Bacon.

Sherwood, R., Kinzer, C., Bransford, J., & Franks, J. (1986). Macro-contexts in science teaching, Technical Report No. 86.1.5. Nashville, TN: Vanderbilt University, Learning Technology Center.

Shoemaker, J., & Fraser, H. (1981, November). What principals can do: Some implications from studies of effective schools. Phi Delta Kappan, 63(2), 178-182.

Snow, R. (1984). Evaluation of medical education--Limburg style. European Science News, 38(3), 115-118.

Sternberg, R. (1981). Intelligence and non-entrenchment. Journal of Educational Psychology, 73, 1-6.

Taylor, B. (1986a, April). How and why successful elementary principals address strategic issues. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Taylor, B. (1986b, April). How the effective elementary principal accomplishes school improvement. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Wellish, J., MacQueen, A., Carriere, R., & Duck, G. (1978) School management and organization in successful schools. *Sociology of Education*, 51, 211-226.

Whitehead, A. (1929). *The aims of education*. New York, Macmillian.